IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	
Tsai et al.	
	Group Art Unit: 1771
Serial No.: 09/752,017	
	Examiner: Cole
Filed: December 28, 2000	
For: BREATHABLE, BIODEGRADABLE / COMPOSTABLE LAMINATES	

APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450 - Mail Stop Appeal Brief - Patents
Alexandria, VA 22313-1450

Dear Sir or Madam:

This provides Appellant's Appeal Brief. In accordance with 37 C.F.R. §1.192, Appellant's provide three copies.

1. **Real Party in Interest:**

The real party in interest is Kimberly-Clark Worldwide, Inc. located in Neenah, Wisconsin. An assignment was recorded at Reel 011418, Frame 0989.

2. **Related Appeals and Interferences:**

There are no pending appeals or interferences related to the present appeal.

3. **Status of Claims:**

Claims 1, 3-8, 12-13, 15-20, and 25 are pending and each has been finally rejected. Claims 2, 9-11, 14, and 21-24 have been previously canceled. Claims 1, 3, 5-8, 13, 15-20, and 25 are being appealed. The current appealed claims are attached at Appendix A.

4. **Status of Amendments:**

Submitted with this Appeal Brief is a Proposed Amendment, which places the claims in better form for consideration on appeal and/or limits the number of issues raised in this appeal.

5. **Summary of Invention:**

The inventions defined by the claims relate to breathable, biodegradable/compostable laminate materials and methods of making the same. The laminate materials of the invention comprise a two-layer structure in which one layer is a biodegradable nonwoven material and the other layer is a filled, stretched, biodegradable film (specification p. 5, lines 21-24). The biodegradable nonwoven material includes polymers selected from the group consisting of aliphatic polyesters, polylactides, polyhydroxybutyrate-co-valerates, sulfonated polyethylene terephthalates, and blends or mixtures thereof (specification p. 6, lines 2-8). The filled, biodegradable

film is stretched from about 100 to about 500 percent of its original length (specification p. 8, lines 29-31). The laminate materials of the invention have a water vapor transmission rate greater than about 3000 g/m^2/24hr (specification p. 10, lines 6-9).

In one embodiment, the nonwoven material comprises polybutylene succinate (specification p. 6, lines 8-10), and the filled, biodegradable film includes a filler such as calcium carbonate (specification p. 6, line 17), which makes up about 10% to about 70% by weight of the filled film (specification p. 7, line 36-38). Other suitable fillers include barium sulfate, sodium carbonate, magnesium carbonate, magnesium sulfate, barium carbonate, kaolin, carbon, calcium oxide, magnesium oxide, aluminum hydroxide, titanium dioxide, latex particles, particles of thermoplastic elastomers, pulp powders, wood powders, cellulose derivatives, chitin, chitozan powder, organosilicone powders, and the like, as well as combinations and derivatives thereof (specification p. 7, lines 1-13).

The methods of the present invention include stretching a filled, biodegradable film from about 100 to about 500 percent its original length and subsequently laminating a biodegradable nonwoven material and a filled, biodegradable film to form a laminate material having a water vapor transmission rate that is greater than about 3000 g/m^2/24 hr (specification p. 5, lines 15-20; p. 8, lines 29-32; and p. 9, lines 14-16). Desirably, the nonwoven material and the film are laminated using a thermal bonding process (specification p. 9, lines 26-28).

6. <u>Issue</u>:

Are claims 1, 3, 5-8, 13, 15-20, and 25 unpatentable under 35 U.S.C. § 103(a) as being obvious over U.S 5,407,979 to Wu et al. in view of JP 11-048436 and U.S. 5,851,937 to Wu et al.?

7. Grouping of Claims:

Claims 1, 5, 7, and 8 stand or fall together. Claims 3 and 6 stand or fall together. Claims 13, 16, 17, 19, and 20 stand or fall together. Claims 15 and 18 stand or fall together. Claim 25 stands or falls on its own.

8. Argument:

To establish a *prima facie* case of obviousness, the prior art must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Wu '979, in view of JP and Wu '937, does not teach each and every element recited in the rejected claims. Moreover, there is no suggestion that the materials described in these references could be modified to include each and every element of the rejected claims. Appellants therefore contend that claims 1, 3, 13, 15, and 25 are separately patentable.

A. Claims 1, 5, 7, and 8 are patentable over Wu '979 in view of JP and Wu '937

The invention defined by claims 1, 5, 7, and 8 is directed to the unobvious discovery that a breathable, biodegradable/compostable laminate material having a water vapor transmission rate greater than about 3000g/m^2/24hr can be produced from (1) a biodegradable nonwoven material selected from aliphatic polyesters, polylactides, polyhydroxybutyrate-co-valerates, sulfonated polyethylene terephthalates, or blends or mixtures thereof; and (2) a filled, biodegradable film that has been stretched from about 100% to about 500% of its original length and selected from aliphatic polyesters,

polylactides, polyhydroxybutyrate-co-valerates, sulfonated polyethylene terephthalates, or blends or mixtures thereof. The prior art does not teach or suggest such a material.

First, the Examiner concedes that Wu '979 does not teach the claimed water vapor transmission rate (WVTR). The Examiner contends, however, that the Wu '979 teaching of the breathability of the film is due to the stretching of the film. Therefore, the Examiner concludes that it would have been obvious to one of ordinary skill in the art to optimize the breathability of the film by selecting the degree of stretching of the laminate through routine experimentation. The Examiner ignores the fact that the claim requires the laminate material to exhibit the claimed WVTR – not that the film or any particular film comprising the laminate material exhibits a WVTR having a value within the claimed range. Simply because the Wu '979 film, which constitutes only a portion of the laminate, may have a particular WVTR does not teach or suggest that the entire laminate would have the same particular WVTR. Consequently, Wu '979 cannot and does not teach a laminate having the requisite WVTR, nor is the claimed WVTR inherent in the claimed combination of materials, as explained below.

Second, the Examiner concedes that Wu '979 does not teach the filled, biodegradable film of the claimed laminate. The Examiner therefore looks to Wu '937 and contends that the polymers listed therein are "art recognized equivalents," any of which may be used to form the filled, biodegradable film of the claimed laminate. Wu '937 suggests, however, in the passage cited by the Examiner, that polyvinyl alcohol (PVOH) may be used as a biodegradable polymer in the invention (*see* col. 2, lines 37-39). According to the Examiner's reasoning, PVOH would be considered equivalent to polylactide simply because both compounds are listed as suitable polymers for use in

the '937 film. Appellants' specification, however, teaches against such use. Appellants' specification points out that "[i]t was determined that PVOH was not an applicable biodegradable polymer for use in the present invention" (*see* [0052]). Thus, PVOH cannot be equivalent to the other polymers disclosed in Wu '937. The mere fact that Wu '937 provides a list of polymers that may be used in the '937 film does not teach that any one of those polymers may be suitable for use in Appellants' invention. For these reasons, there is no motivation to combine Wu '979 and Wu '937, and there is no *prima facie* case of obviousness.

Finally, the Examiner concedes that Wu '979 does not teach using a filler in the film layer, but contends that it would have been obvious in view of JP for one having ordinary skill in the art to incorporate a filler into the film of Wu '979. Appellants cannot agree. JP simply teaches the use of a particulate material as a bulking agent. Although JP discloses adding a filler to enhance the strength and biodegradability of a film, it does not teach or suggest adding a filler to create a microporous structure having a higher void volume to achieve a WVTR of greater than about 3000 $g/m^2/24$ hr. Moreover, the present specification, particularly Comparative Example C, which includes 58% filler but has a low WVTR of only 1500 $g/m^2/24$ hr, demonstrates that the claimed WVTR of greater than about 3000 $g/m^2/24$ hr is not inherent in a laminate containing filler. One skilled in the art cannot simply look to Wu '979 and JP and conclude that the claimed WVTR will result. Accordingly, the proposed combination does not teach or suggest the claimed laminate.

Additionally, none of the cited references teach a stretched filled, biodegradable film that has been stretched from about 100% to about 500% of its original length, and

doing so would not be obvious. Appellants discovered that a stretched film within the specific claimed range unexpectedly provides the claimed WVTR in the claimed laminate and maximizes breathability without sacrificing strength. Further, both Wu '937 and Wu '979 teach away from such stretching because they state that the stretching process weakens the film, even when the film is stretched to increase the total area by only 44% (*see* Wu '937 col. 6, lines 1-4 and Wu '979 col. 7, lines 4-6).

Nor does any cited reference teach the claimed WVTR of greater than about 3000 g/m^2/24 hr. Moreover, the WVTR property is not inherent in the claimed combination of materials, as shown by the different WVTRs achieved for the similar compositions disclosed in Tables 3 and 4 of the Application. For example, Comparative Examples B and C contain the same nonwoven material, the same film material, and similar amounts of filler, yet Example B has a WVTR of 4100 g/m^2/24 hr and Example C has a WVTR of only 1500 g/m^2/24 hr. Therefore, the claimed WVTR cannot be inherent in the claimed combination of materials.

B. Claims 3 and 6 are patentable over Wu '979 in view of JP and Wu '937

Claims 3 and 6 depend either directly or indirectly from claim 1 and further require that the laminate material of claim 1 comprise polybutylene succinate as the biodegradable nonwoven material (claim 3) and calcium carbonate as the filler (claim 6). As pointed out above, Wu '979 in view of JP and Wu '937 does not teach or suggest the breathable, biodegradable/compostable laminate material of claim 1. Likewise, these references do not teach or suggest a laminate material that uses polybutylene succinate as the biodegradable nonwoven material, nor a laminate material containing the specific

combination of polybutylene succinate and about 30% to about 60% calcium carbonate in the film.

Further, an argument that the prior art suggests the claimed combination must fail, because the prior art merely invites one of ordinary skill in the art to try the various materials disclosed therein to obtain the desired water vapor transmission rate. "Obvious-to-try" is not the correct legal standard for an obviousness rejection. *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995). An "obvious-to-try" situation exists when a general disclosure may pique the scientist's curiosity, such that further investigation might be done as a result of the disclosure, but the disclosure itself does not contain a sufficient teaching of how to obtain the desired result, or that the claimed result would be obtained if certain directions were pursued. *In re Eli Lilly & Co.*, 902 F.2d 943, 14 USPQ2d 1741 (Fed. Cir. 1990). Moreover, taking into consideration the numerous potential polymers and fillers that may be used in a laminate, and the proposition that an invention cannot be rendered obvious by using hindsight reconstruction to pick and choose among the prior art to arrive at the applicant's invention (*see In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992)), it would not have been obvious to one of ordinary skill in the art to create the claimed combination of materials to obtain a breathable, biodegradable/compostable laminate material having a water vapor transmission rate greater than about 3000 g/m^2/24 hr.

C. Claims 13, 16, 17, 19, and 20 are patentable over Wu '979 in view of JP and Wu '937

The invention defined by claims 13, 16, 17, 19, and 20 is directed to the unobvious discovery that a breathable, biodegradable/compostable laminate material having a water vapor transmission rate of greater than about 3000 g/m^2/24 hr can be

formed by (1) stretching a filled, biodegradable film from about 100% to about 500% of its original length; and (2) subsequently laminating the filled film and a biodegradable nonwoven material selected from aliphatic polyesters, polylactides, polyhydroxybutyrate-co-valerates, sulfonated polyethylene terephthalates, and blends or mixtures thereof.

The Examiner concedes that Wu '979 does not teach laminating a film to a biodegradable nonwoven. JP, in which a stretching step is totally absent, does not remedy this deficiency, nor does Wu '937. The films of Wu '937 are made by a process completely different than the process defined by Appellants' claims and, therefore, Wu '937 does not teach or suggest the claimed method. Wu '937 teaches a process in which a film is laminated to a nonwoven material before the resulting film is stretched (*see* col. 2, lines 26-29). Appellants' claims require that the filled, biodegradable film be laminated after the filled, biodegradable film is stretched. Although the film of Wu '979 will have enhanced adhesion with the nonwoven because the softened film will penetrate into the structure of the nonwoven, this penetration will likely adversely affect the breathability of the film. Thus, the Examiner's contention that it would have been obvious to optimize the breathability of the film simply by stretching the film must fail. Instead, Appellants have discovered that breathability can be increased by stretching the claimed film material from about 100% to about 500% of its original length prior to laminating it with the claimed nonwoven. This pre-lamination stretching helps generate a highly porous structure having enhanced water vapor transmission rates even without the presence of a filler. As shown in Tables 3 and 4 and in Figure 6, the films of Wu '979 cannot simply be stretched to achieve the Appellants' claimed breathabilities. Indeed,

although the films of Wu '979 have a thickness similar to that of Appellants' claimed films, they exhibit a WVTR of only 410 g/m^2/24 hr – a figure substantially below Appellants' claimed WVTR of 3000 g/m^2/24 hr. Consequently, it would not have been obvious for one having ordinary skill in the art to merely stretch the resulting (laminated) film to arrive at a laminate with the claimed WVTR.

D. Claims 15 and 18 are patentable over Wu '979 in view of JP and Wu '937

Claims 15 and 18 depend either directly or indirectly from claim 13 and further require that the method of claim 13 include laminating a biodegradable nonwoven material made of polybutylene succinate (claim 15) and a biodegradable film containing calcium carbonate filler (claim 18). As pointed out above, Wu '979 in view of JP and Wu '937 does not teach or suggest the method of claim 13. Likewise, these references do not teach or suggest a method in which polybutylene succinate is laminated to a biodegradable film containing about 30% to about 60% calcium carbonate filler. Moreover, taking into consideration the numerous potential polymers and fillers that may be used in making a laminate, and the proposition that an invention cannot be rendered obvious by using hindsight reconstruction to pick and choose among the prior art to arrive at the applicant's invention (*see In re Fritch*, 972 F.2d 1260 (Fed. Cir. 1992)), it would not have been obvious for one of ordinary skill in the art to perform the claimed method to obtain a breathable, biodegradable/compostable laminate material having a water vapor transmission rate greater than about 3000 g/m^2/24 hr.

E. Claim 25 is patentable over Wu '979 in view of JP and Wu '937

Claim 25 depends from claim 13 and further requires that the method include lamination of the biodegradable nonwoven material and the filled, biodegradable film

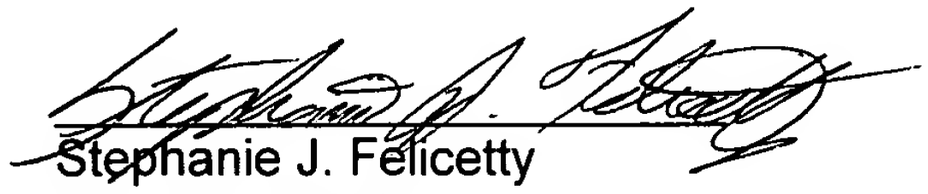
using a thermal bonding process. As pointed out above, Wu '979 in view of JP and Wu '937 does not teach or disclose the claimed method of making a breathable, biodegradable/compostable laminate material. Likewise, these references do not teach or suggest a method which includes thermally bonding the nonwoven material and the filled film material into a laminate.

In fact, Wu '937 teaches away from the claimed method. Wu '937 teaches a material that is "incrementally stretched to produce a totally biodegradable and/or compostable laminate that is softer than that produced when the biodegradable and/or compostable nonwoven web is bonded to the biodegradable and/or compostable film" (*see* Abstract). Therefore, Wu '937 teaches away from thermally bonding the nonwoven web to the film. Wu '979 and JP are silent with respect to the thermal bonding of laminate materials. Accordingly, the proposed combination of references cannot and does not render claim 25 obvious.

Conclusion

Appellant respectfully submits that the inventions defined by the claims 1, 3, 5-8, 13, 15-20, and 25 are not obvious over Wu '979 in view of JP and Wu '937. Therefore, Appellant respectfully requests reversal of the rejection and allowance of the claims.

Respectfully submitted,



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APPENDIX A

1. A breathable, biodegradable/compostable laminate material comprising:

a. a biodegradable nonwoven material selected from the group comprising aliphatic polyesters; polylactides; polyhydroxybutyrate-co-valerates; sulfonated polyethylene terephthalates; blends or mixtures thereof; and

b. a filled, biodegradable film stretched from about 100 to about 500 percent of its original length and selected from the group consisting of aliphatic polyesters; polylactides; polyhydroxybutyrate-co-valerates; sulfonated polyethylene terephthalates; and blends or mixtures thereof;

wherein the breathable, biodegradable/compostable laminate material has a water vapor transmission rate that is greater than about 3000 $g/m^2/24hr$.

3. The breathable, biodegradable/compostable laminate material of Claim 1, wherein the biodegradable nonwoven material comprises polybutylene succinate.

5. The breathable, biodegradable/compostable laminate material of Claim 1, wherein the filled, biodegradable film includes a filler selected from clay, silica, alumina, powdered metals, glass microspheres, calcium carbonate, barium sulfate, sodium carbonate, magnesium carbonate, magnesium sulfate, barium carbonate, kaolin, carbon, calcium oxide, magnesium oxide, aluminum hydroxide, titanium dioxide, talc, mica, wollastonite, latex particles, particles of thermoplastic elastomers, pulp powders, wood powders, cellulose derivatives, chitin, chitozan powder, organosilicone powders, polyacrylic acid, magnesium sulfate, sodium sulfite, sodium hydrogen sulfite, sodium sulfate, sodium hydrogen sulfate, sodium phosphate, sodium hydrogen phosphate, sodium carbonate, sodium hydrogen carbonate, potassium carbonate, sodium hydroxide, potassium hydroxide, sodium chloride, potassium chloride, or mixtures thereof.

6. The breathable, biodegradable/compostable laminate material of Claim 5, wherein the filler comprises calcium carbonate.

7. The breathable, biodegradable/compostable laminate material of Claim 1, wherein a filler comprises from about 10 to about 70 percent by weight of the filled, biodegradable film.

8. The breathable, biodegradable/compostable laminate material of Claim 7, wherein the filler comprises from about 30 to about 60 percent by weight of the filled, biodegradable film.

13. A method of making a breathable, biodegradable/compostable laminate material comprising:

stretching a filled, biodegradable film to form the breathable, biodegradable/compostable laminate material from about 100 to about 500 percent of its original length; and,

subsequently laminating a biodegradable nonwoven material selected from the group consisting of aliphatic polyesters; polylactides; polyhydroxybutyrate-co-valerates; sulfonated polyethylene terephthalates; and blends or mixtures thereof and the filled, biodegradable film to form the breathable, biodegradable/compostable laminate material;

wherein the breathable, biodegradable/compostable laminate material has a water vapor transmission rate that is greater than about 3000 $g/m^2/24hr$.

15. The method of Claim 13, wherein the biodegradable nonwoven material comprises polybutylene succinate.

16. The method of claim 13, wherein the filled, biodegradable film includes aliphatic polyesters; polylactides; polyhydroxybutyrate-co-valerates; polycaprolactones; sulfonated polyethylene terephthalates; blends or mixtures thereof.

17. The method of Claim 13, wherein the filled, biodegradable film includes a filler selected from clay, silica, alumina, powdered metals, glass microspheres, calcium carbonate, barium sulfate, sodium carbonate, magnesium carbonate, magnesium sulfate, barium carbonate, kaolin, carbon, calcium oxide, magnesium oxide, aluminum hydroxide, titanium dioxide, talc, mica, wollastonite, latex particles, particles of

thermoplastic elastomers, pulp powders, wood powders, cellulose derivatives, chitin, chitozan powder, organosilicone powders, polyacrylic acid, magnesium sulfate, sodium sulfite, sodium hydrogen sulfite, sodium sulfate, sodium hydrogen sulfate, sodium phosphate, sodium hydrogen phosphate, sodium carbonate, sodium hydrogen carbonate, potassium carbonate, sodium hydroxide, potassium hydroxide, sodium chloride, potassium chloride, or mixtures thereof.

18. The method of Claim 17, wherein the filler comprises calcium carbonate.

19. The method of Claim 13, further comprising a filler in an amount from about 10 to about 70 percent by weight of the filled, biodegradable film.

20. The method of Claim 19, wherein the filler comprises from about 30 to about 60 percent by weight of the filled, biodegradable film.

25. The method of Claim 13, wherein the biodegradable nonwoven material and the filled, biodegradable film are laminated using a thermal bonding process.